

## **DRAWINGS**

Attached please find formal replacement FIGS. 1, 2, 7, and 8 for the originally submitted FIGS. 1, 2, 7 and 8. The new formal replacement figures add no new matter.

## **REMARKS**

Claims 1-53 are pending in this application. Attached hereto is a complete listing of all claims in the application, with their current status listed parenthetically. By this Response, claims 1, 6, 8, 29, 34, 36 and 57 have been amended, and are presented with markings indicating their current amendments. Claims 7 and 35 have been cancelled, without prejudice to later prosecution.

### **In the Drawings**

In the Office Action, the Examiner objects to FIGS. 1 and 2 because they should be labeled PRIOR ART. In response, Applicant has so amended both FIGS. 1 and 2, and submits amended drawing sheets. Applicant also submits substitute formal drawing sheets for FIGS. 7 and 8 that comply with the Examiners recommendations. Applicant respectfully requests that the Examiner approve these drawing amendments to facilitate the allowance of this application.

### **In the Abstract**

In the Office Action, the Examiner objects to the Abstract because it contains the following two sentences:

This Abstract is provided for the sole purpose of complying with the Abstract requirement rules that allow a reader to quickly ascertain the subject matter of the disclosure contained herein. This Abstract is submitted with the explicit understanding that it will not be used to interpret or to limit the scope or the meaning of the claims.

The Examiner suggests that Applicant delete these sentences and refers Applicant to M.P.E.P. § 608.01(b). However, the first paragraph of M.P.E.P. § 608.01(b) quotes 37 C.F.R. 1.72(b), of which the last sentence reads: "The abstract will not be used for interpreting the scope of the claims."

Thus, Applicant's abstract simply repeats what is an established federal rule. Therefore, Applicant respectfully requests that the Examiner reconsider and withdraw this objection.

### **In the Specification**

Applicant has amended the specification to address the Examiner's objections. No new matter has been added.

### **Claim Objections**

Applicant has amended independent claims 1, 29, and 57 as suggested by the Examiner. The claim amendments have been drafted in response to the Examiner's objection, to impart precision into the claims by more particularly pointing out the invention. The claim amendments have not been drafted to overcome any prior art. In view of the above, Applicant respectfully requests that the Examiner reconsider and withdraw this objection.

### **Rejection Under 35 U.S.C. § 112, 1<sup>st</sup> paragraph**

In the Office Action the Examiner rejects claims 6-8 and 34-36 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Specifically, the Examiner states, "[a]s per claims 6 and 34, the disclosure doesn't disclose that filtering the local signal to produce a first duplicate and a second duplicate signal uses a plurality of low-pass filters. In response, independent claims 6 and 34 have been amended to recite "at least one low-pass filter" and the specification has been amended to clarify that the matched filter may be a low-pass filter. Support for this amendment is found in the originally-filed claims. Dependent claims 7 and 35 have been canceled, and dependent claims 8 and 36 amended to provide a more definite recitation and not to overcome any cited prior art.

The Examiner additionally rejects claims 10-13 and 38-41 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Specifically, the Examiner states, “[a]s per claims 10 and 38, the disclosure doesn’t disclose that filtering the local signal to produce a first duplicate signal and a second duplicate signal comprises a band-pass filter.” By this response the Applicant amends the specification to include the matter recited in the originally filed claims 10 and 38. Since claims 11-13 and 39-41 depend directly or indirectly from claims 10 and 38, this specification amendment addresses the Examiners rejection to these claims. Therefore, Applicant respectfully requests the Examiner reconsider and withdrawal this rejection.

#### **Rejection Under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph**

In the Office Action the Examiner rejects claims 7, 8, 11, 12, 18, 21, 22, 27, 35, 36, 39, 42, 46, 49, 50, and 55 under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Specifically, the Examiner rejects claim 7 as vague and indefinite for using the recitation “approximately equal”; claim 8 for its dependency from 7 and its recitation of “approximately 3 gigahertz; claim 11 for its recitation of “approximately 3 gigahertz”; claim 12 for its dependency from claim 11 and its recitation of “approximately 5 gigahertz; claim 27 for its recitation of “about 1 millisecond”; claim 35 for its recitation “approximately equal”; claim 36 for its dependency on 36 and its recitation of “approximately 3 gigahertz; claim 39 for its recitation “approximately 3 gigahertz”; claim 40 for its dependency on 39 and its recitation of “approximately 5 gigahertz”, claim 46 for its recitation “approximately a bit time duration”; and claim 55 for its recitation “about 1 millisecond”.

The Applicant respectfully traverses these rejections. Applicant notes that breadth of a claim is not to be equated with indefiniteness. See M.P.E.P. § 2173.04. Nor does relative terminology render a claim indefinite See M.P.E.P. §2173.05(b). When terms of degree such as “approximately” and “about” are used, the determination rests on “whether one of ordinary skill in the art, in view of the prior art and the status of the art, would be nevertheless **reasonably appraised** of the scope of the invention. *Id.* Applicant reminds the Examiner that “as a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid reliance on the doctrine of equivalents. See, *In Re Wiggins*, 488 F. 2d 538, 541

For example, use of the term “about” has been found to be “clear but flexible”. See *Ex Parte Eastwood*, 163 USPQ 316. Applicant asserts that the relative terms in the above-cited claims do not render the claims vague or indefinite and that one of ordinary skill in the art would be **reasonably appraised** of the claim scope. Therefore, Applicant respectfully requests the Examiner withdrawal this rejection.

The Examiner additionally rejects claim 42 under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph for having insufficient antecedent basis for the limitation “output generator”. In response, claim 29 has been amended to include “an output signal generator” thus providing proper antecedent basis for claim 42. This amendment was drafted in response to the indefiniteness rejection, to impart precision into the claims by more particularly pointing out the invention. This claim amendment has not been drafted to overcome any prior art.

### **Claim Rejections Under 35 U.S.C. § 103**

In the Office Action, claims 1, 2, 5-7, 9-10, 14-24, 27-30, 33-35, 37-38, 42-52, and 55-57 stand rejected as unpatentable under 35 U.S.C. § 103(a) over U.S. patent 6,810,087 B2 (“Hector”) in view of U.S. Patent 4,419,759 A (“Poklemba”). Applicant respectfully traverses this rejection. The rejection of claims 7 and 35 is now moot as these claims have been cancelled.

## **A. The Law of Obviousness**

In order to establish a *prima facie* case of obviousness, three basic criteria must be met:

"First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined), must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." M.P.E.P. § 2142.

### **I. No motivation to combine references**

M.P.E.P. § 2143.01 states: "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious."

In the Office Action, the Examiner states the motivation to combine as follows:

"Hector and Poklemba are analogous art because they are from a similar problem solving area of carrier recovery. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in the decoding system disclosed by Hector the carrier synchronization disclosed by Poklemba. The suggestion/motivation for doing so would have been to obtain effective carrier regeneration." (emphasis added)

This statement leads the Applicant to believe that the Examiner may be mistaken in his understanding of ultra-wideband communications systems. This is because the proposed combination of a narrowband carrier based system, taught by Poklemba, with the ultra-wideband impulse based system, taught by Hector, would change the basic principals of operation of either reference. Put differently, each reference teaches a distinct, and different communication technology, which operate in fundamentally different ways, and therefore one skilled in the art would not be motivated to combine these references.

To explain, Hocter teaches that "[u]ltra wideband (UWB) systems operate by transmitting and receiving a sequence of very short radio frequency (RF) pulses, the duration of which is typically less than a nanosecond" (col. 1, lines 16-19). But Poklemba teaches "concurrent synchronization of **carrier** phase and clock timing in dual sideband suppressed **carrier** transmission systems. The proposed combination of a narrowband carrier based system, taught by Poklemba, with the ultra-wideband pulse based system, taught by Hocter, would change the basic principals of operation of either reference, and is a practical impossibility.

For example, would Hocter's pulses be superimposed on Poklemba's carrier? Or would the proposed combination operate by attempting to phase lock to a carrier as taught in Poklemba, when no carrier is present in the Hocter pulses? These references are clearly apples and oranges.

Poklemba describes a continuous sinusoidal signal 
$$r(t) = \sum_{i=1}^N a_i(t - iT) \cos(\omega t) + b_i(t - iT) \sin \omega t$$

[see column 4, line 11], whereas Hocter teaches an ultra-wideband pulse based system that transmits nanosecond pulses, as discussed above.

Applicant submits that no motivation to combine these references can exist, as it is a practical impossibility to combine them.

## II. Reasonable Expectation of Success

The second prong of a *prima facie* case of obviousness requires a reasonable expectation of success. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure." M.P.E.P. § 2142.

As discussed above any combination of Hocter with Poklemba would result in an inoperable combination. An ultra-wideband device taught by Hocter, employing the carrier recovery techniques of Poklemba would fail to recover a carrier since none is present in the

transmitted signal. A continuous wave system (Poklemba) attempting to regenerate a carrier from a pulsed based system (Hector) would fail for the same reason. There is no carrier present in the signal to recover. Since any proposed combination of these references results in an inoperable combination, one skilled in the art would not have a reasonable expectation of success when attempting to combine the cited references.

Therefore, Applicant respectfully requests the Examiner reconsider and withdrawal this rejection.

In view of the above discussion, Applicant respectfully submits that the Section 103 rejection of independent claims 1, 29 and 57 has been traversed. Because claims 2-6, 8-28, 30-34 and 36-56 depend from either claim 1 or 29, it is respectfully submitted that the rejection of claims 2-6, 8-28, 30-34 and 36-56 have been traversed by virtue of their dependency from either claim 1 or 29. M.P.E.P. § 2143.03.



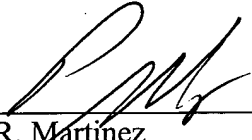
**Conclusion**

Applicant believes that this Response has addressed all items in the Office Action and now places the application in condition for allowance. Accordingly, favorable reconsideration and allowance of claims 1-6, 8-34, and 36-57 at an early date is solicited. No fee is believed due with this response. Should any issues remain unresolved, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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Date

  
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